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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/840,093	05/05/2004	Ching-Shan Lu	67,200-1125	7837

7590 09/19/2005

TUNG & ASSOCIATES
Suite 120
838 W. Long Lake Road
Bloomfield Hills, MI 48302

EXAMINER	
COHEN, AMY R	

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/840,093	LU ET AL.	
	Examiner	Art Unit	
	Amy R. Cohen	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 May 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsushima (U. S. Patent No. 6,339,730).

Matsushima teaches a method for re-calibrating a homing position of a substrate on a substrate support, comprising the steps of: providing a control substrate in said homing position on said substrate support (Col 7, lines 28-46); providing said control substrate in a test position on said substrate support (Col 7, lines 28-46); determining a substrate center shift between a center (P0) of said control substrate at said homing position and said center (PW) of said control substrate at said test position (Col 7, line 46-Col 8, line 16).

Matsushima teaches the method comprising the steps of dividing said substrate support into a cartesian grid, assigning a pair of homing center position coordinates (x_0, y_0) to said center of said control substrate at said homing position said control substrate (Fig. 5 and Col 7, lines 28-45), and assigning a pair of test center position coordinates (PW) to said center of said control substrate at said test position of said control substrate (Fig. 5 and Col 7, lines 46-56); and wherein said substrate center shift is determined using said pair of homing center position coordinates and said test center position coordinates (Col 7, lines 46-65).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-16, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushima (U. S. Patent No. 6,339,730) in view of Cheng et al. (U. S. Patent No. 6,357,131).

Regarding claims 1-12: Matsushima discloses a method for testing a position of a substrate on a substrate support, comprising the steps of: providing a control substrate (W) having first and second alignment points (B1, B2, Col 7, lines 28-45); providing said control substrate in a homing position on the substrate support (at position B1, B2, Col 7, lines 28-45); providing said control substrate in a test position (P1, P2) on the substrate support (Col 7, lines 46-56); measuring a displacement between said first alignment point at said homing position of said control substrate and said first alignment point at said test of said control substrate (Fig. 5 and Col 7, line 46-Col 8, line 16).

Matsushima discloses the method comprising the step of measuring a second displacement between said second alignment point at said homing position of said control substrate and said second alignment point at said test position of said control substrate (Fig. 5 and Col 7, line 46-Col 8, line 16).

Matsushima discloses the method comprising the step of determining a radial orientation shift of said control substrate between said control substrate at said homing position and said control substrate at said test position (Fig. 5 and Col 7, line 46-Col 8, line 16).

Matsushima discloses the method comprising the step of measuring a second displacement between said second alignment point at said homing position of said control substrate and said second alignment point at said test position of said control substrate (Fig. 5 and Col 7, line 46-Col 8, line 16).

Matsushima discloses the method comprising the steps of dividing said substrate support into a cartesian grid, assigning a first pair of homing coordinates for said first alignment point (Fig. 5 and Col 7, lines 28-45) and a second pair of homing coordinates for said second alignment point on said cartesian grid (Fig. 5 and Col 7, lines 28-45) when said control substrate is in said homing position, and assigning a first pair of test coordinates for said first alignment point (X1, Y1) and a second pair of test coordinates for said second alignment point (X2, Y2) when said control substrate is in said test position (Fig. 5 and Col 7, lines 46-56); and wherein said measuring a displacement comprises the steps of determining an X/Y shift between said first pair of homing coordinates and said first pair of test coordinates for said first alignment mark (Fig. 5 and Col 7, line 46-Col 8, lines 16, specifically, Col 7, lines 48-56).

Matsushima does not disclose the method wherein the first and second alignment points are alignment marks; wherein said alignment marks are provided in substantially diametrically-opposed relationship to each other on said control substrate.

Cheng et al. discloses a method for testing a position of a substrate on a substrate support wherein the first and second alignment points are alignment marks (10, 15); wherein said alignment marks are provided in substantially diametrically-opposed relationship to each other on said control substrate (Figs. 1, 4 and Col 4, lines 39-52).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Matsushima to include alignment marks which are

diametrically opposed to each other, as taught by Cheng et al., in order to eliminate further calculations of the chord distance between the two alignment marks, ensuring accuracy.

Regarding claims 13-16: Matsushima discloses a method for testing a position of a substrate on a substrate support, comprising the steps of: providing a control substrate having first and second alignment points (Col 7, lines 28-45); providing said control substrate in a homing position on the substrate support (Col 7, lines 28-45); providing said control substrate in a test position on the substrate support (Col 7, lines 46-56); measuring a displacement between said first alignment point at said homing position of said control substrate and said first alignment point at said test position of said control substrate (Fig. 5 and Col 7, line 46-Col 8, line 16); and comparing said displacement to a deviation range of acceptable displacements (Col 3, lines 6-67).

Matsushima discloses the method comprising the step of determining a radial orientation shift of said control substrate between said control substrate at said homing position and said control substrate at said test position and comparing said radial orientation shift to a deviation range of acceptable radial orientation shifts (Col 3, lines 42-67 and Col 7, lines 46-66).

Matsushima discloses the method comprising the steps of dividing said substrate support into a cartesian grid, assigning a first pair of homing coordinates for said first alignment point (Fig. 5 and Col 7, lines 28-45) and a second pair of homing coordinates for said second alignment point on said cartesian grid (Fig. 5 and Col 7, lines 28-45) when said control substrate is in said homing position, and assigning a first pair of test coordinates for said first alignment point (X1, Y1) and a second pair of test coordinates for said second alignment point (X2, Y2) when said control substrate is in said test position (Fig. 5 and Col 7, lines 46-56); and wherein said measuring a displacement comprises the steps of determining an X/Y shift between said first

pair of homing coordinates and said first pair of test coordinates for said first alignment mark (Fig. 5 and Col 7, line 46-Col 8, lines 16, specifically, Col 7, lines 48-56).

Matsushima does not disclose the method wherein the first and second alignment points are alignment marks; wherein said alignment marks are provided in substantially diametrically-opposed relationship to each other on said control substrate.

Cheng et al. discloses a method for testing a position of a substrate on a substrate support wherein the first and second alignment points are alignment marks (10, 15); wherein said alignment marks are provided in substantially diametrically-opposed relationship to each other on said control substrate (Figs. 1, 4 and Col 4, lines 39-52).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Matsushima to include alignment marks which are diametrically opposed to each other, as taught by Cheng et al., in order to eliminate further calculations of the chord distance between the two alignment marks, ensuring accuracy.

Regarding claims 19-20: Matsushima discloses the method as described above in paragraph 2 and comprising the steps of providing first and second alignment points (B1, B2) on said control substrate (Fig. 5 and Col 7, lines 28-45); assigning a first pair of homing coordinates for said first alignment point and a second pair of homing coordinates for said second alignment point on said cartesian grid when said control substrate is in said homing position (Fig. 5 and Col 7, lines 28-45), and assigning a first pair of test coordinates for said first alignment point and a second pair of test coordinates for said second alignment point (P1, P2) when said control substrate is in said test position (Fig. 5 and Col 7, lines 46-56); and wherein said test center position coordinated are determined using said first pair of homing coordinates, said first pair of test coordinates, said second pair of homing coordinates, and said second pair of test coordinates (Col 7, lines 46-67).

Matsushima discloses the method comprising the step of determining a radial orientation shift of said control substrate between said control substrate at said homing position and said control substrate at said test position and wherein said test center position coordinates are determined using said first pair of homing coordinates, said first pair of test coordinates, said second pair of homing coordinates, said second pair of test coordinates and said radial orientation shift (Col 7, lines 46-67).

Matsushima not disclose the method wherein the first and second alignment points are alignment marks.

Cheng et al. discloses a method for testing a position of a substrate on a substrate support wherein the first and second alignment points are alignment marks (10, 15) (Figs. 1, 4 and Col 4, lines 39-52).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Matsushima to include alignment marks, as taught by Cheng et al., in order to ensure that the control substrate is accurately measured at the homing and test positions.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patent teach alignment Beckhart et al. (U. S. Patent No. 6,568,098), Look et al. (U. S. Patent No. 6,436,726), Liu et al. (U. S. Patent No. 6,301,798), Mugibayashi et al. (U. S. Patent No. 6,242,318), Tigelaar et al. (U. S. Patent No. 6,180,424), Yasuda (U. S. Patent No. 6,177,330), Takizawa (U. S. Patent No. 5,929,529), Hennessey et al. (U. S. Patent No. 5,696,835), Niewmierzycki (U. S. Patent No. 5,452,521), and Miyazaki et al. (U. S. Patent No. 4,635,373).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy R. Cohen whose telephone number is (571) 272-2238. The examiner can normally be reached on 8 am - 5 pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ARC
September 14, 2005

Diego Gutierrez
Supervisory Examiner
Tech Center 2800